S. H. HEINMILLER.

MANURE LOADER.

APPLICATION FILED MAR. 11, 1911.

1,003,182.

Patented Sept. 12, 1911.

3 SHEETS—SHEET 1.

FIG. 1.

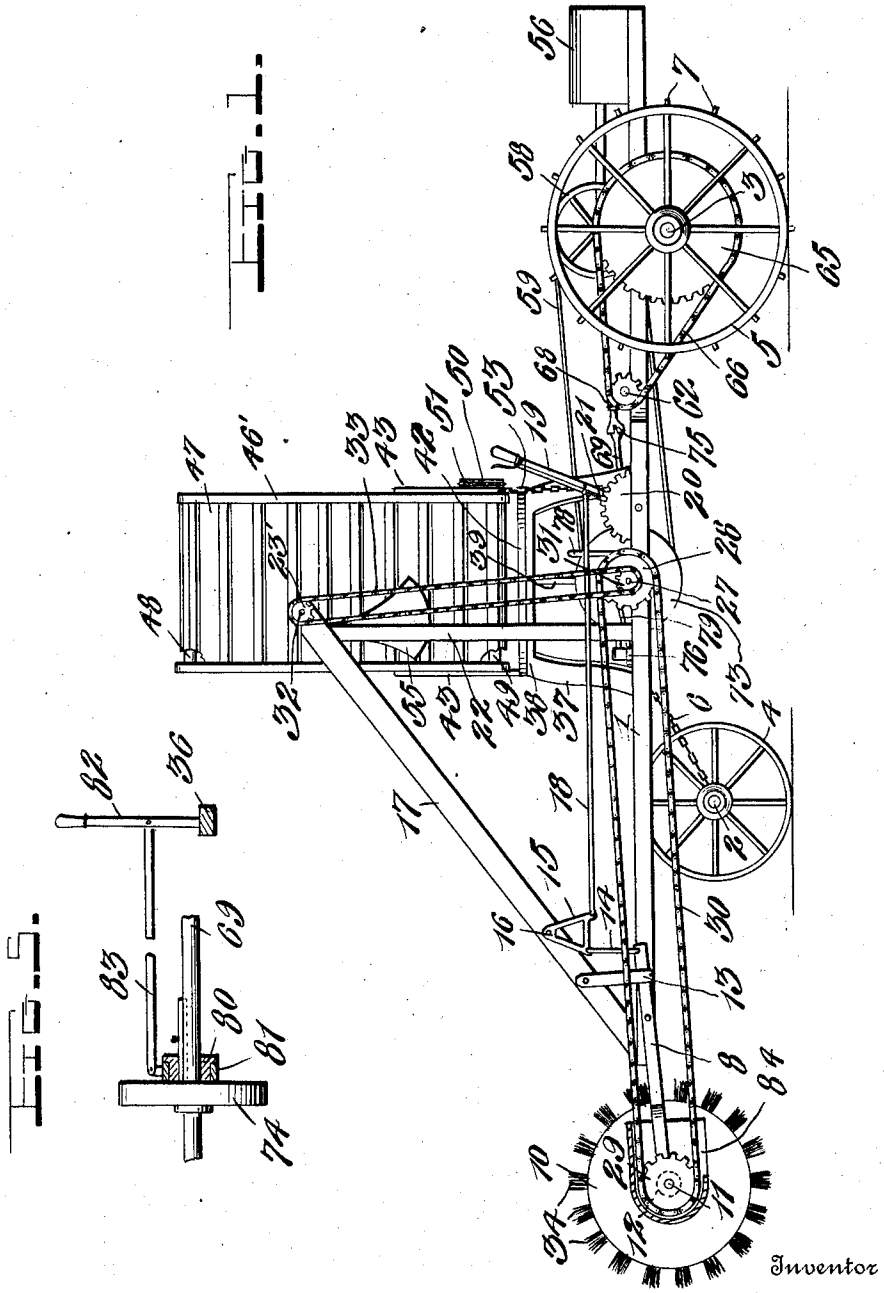

FIG. 5.

Witnesses

Chas. L. Geistauer.

L. G. Ellis.

Inventor

S. H. Heinmiller;

By Watson E. Coleman,

Attorney

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

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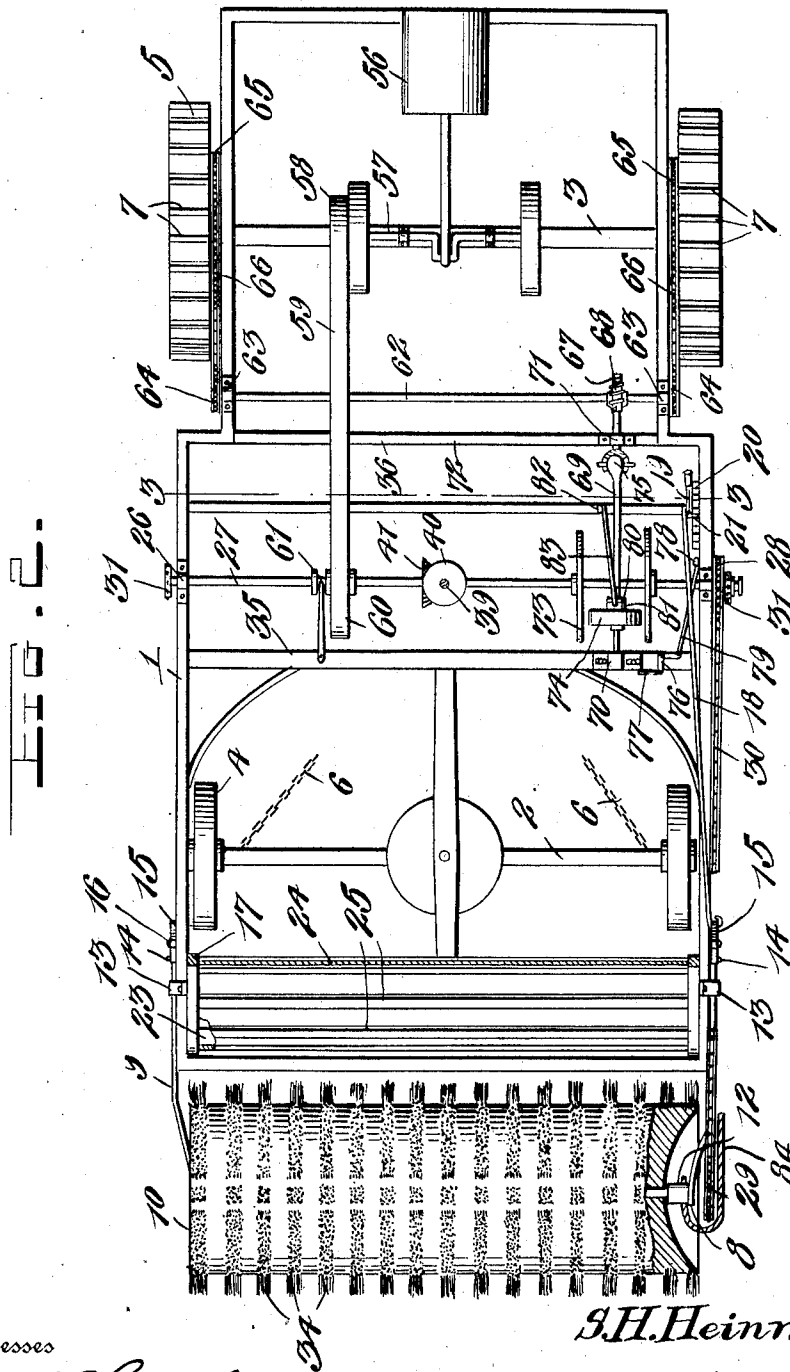
3 SHEETS—SHEET 2.

FIG. 2.



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3 SHEETS—SHEET 3.

Fig. 3.

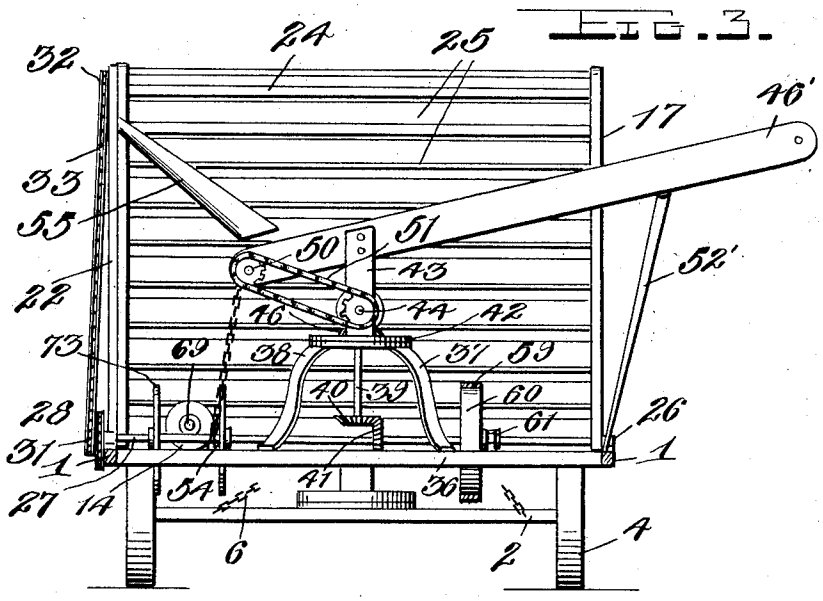
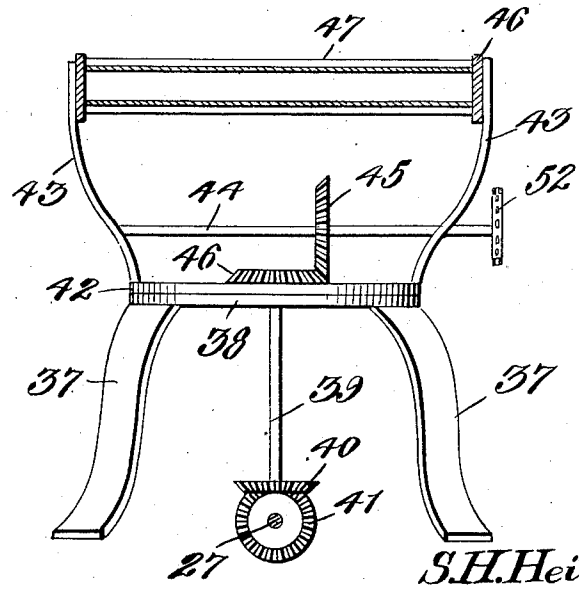


Fig. 4.



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Attorney

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UNITED STATES PATENT OFFICE.

SAMUEL H. HEINMILLER, OF NEW HAMPTON, IOWA.

MANURE-LOADER.

1,003,182. Specification of Letters Patent. **Patented Sept. 12, 1911.**

Application filed March 11, 1911. Serial No. 613,726.

To all whom it may concern:

Be it known that I, SAMUEL H. HEINMILLER, a citizen of the United States, residing at New Hampton, in the county of Chickasaw and State of Iowa, have invented certain new and useful Improvements in Manure-Loaders, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to new and useful improvements in manure loaders, and my object is to provide a device of this character with means thereon for the traction of the same.

A further object is to provide a device of this character having a pair of endless elevators operating in planes at right angles to one another, and to provide means for the operation of said elevators through the same means causing the traction of the machine.

A further object is to provide a rotating drum adapted to engage the manure and pass the same to the endless elevators.

A still further object is to provide means for the rotative movement of one of said elevators, whereby the same may be allowed to extend from either side, or the rear of the machine.

A still further object is to provide means for the forward or reverse movement of the machine and the increasing or decreasing of the speed of such movements.

With these and other objects in view, my invention consists in the novel features of construction, combination and arrangement of parts, as will be hereinafter referred to, and more particularly pointed out in the specification and claims.

In the accompanying drawings, forming a part of this application, Figure 1 is a side elevation of the machine. Fig. 2 is a top plan view of the machine with one of the elevators partly in section and the other removed. Fig. 3 is a rear elevation of the machine. Fig. 4 is an enlarged elevation of the supporting means for one of the elevators, and, Fig. 5 is an enlarged elevation of a detail of the invention.

In carrying out my invention, I shall refer to the drawings, in which similar reference characters designate corresponding parts throughout the several views, and in which 1 indicates a frame mounted on the front and rear axles 2 and 3, respectively, which axles are provided with the wheels 4 and 5 respectively. The front axle is connected by the chains 6 to the usual, or any preferred form, of steering mechanism, whereby the machine may be guided, and the rear wheels 5 are provided with the flanges 7 thereon to engage the ground and prevent the slipping of the machine.

Additionally mounted at the ends of the frame 1, about midway of their lengths, are the arms 8 and 9, between the outer ends of which is mounted the rotatable drum 10, said drum being mounted on the shaft 11, extending through the longitudinal center thereof, and the ends of said arms 8 and 9 are secured to bearing boxes, or the like, 12, adjacent the ends of said shaft 11, thereby making it possible for the rotation of said drum between said arms. As stated, said arms 8 and 9 are pivoted about midway of their lengths to the frame 1, and have the inner ends thereof extended through the guards or keepers 13, the extreme inner ends of said arms being connected by means of links 14 to one of the arms of the bell cranks 15, said bell cranks being mounted on the ends of a shaft 16, extending completely through a frame 17, the purpose of which will be hereinafter described. The opposite end of each of the bell cranks 15 is pivotally connected to one end of a rod 18, said rod having pivotal connection with a lever 19, which lever is pivotally mounted on said frame 1. In this manner said drum 10 may be raised or lowered as desired through the movement of said lever 19, and in order to retain said drum in its various adjusted positions, I provide a segmental gear 20, on said frame adjacent the pivotal point of said lever, which segment is adapted to be engaged by a detent 21 carried by said lever.

The frame 17 extends upwardly at an angle from the rear of the frame and is held in such inclined position by means of the supports 22, and said frame has mounted at its ends the rollers 23 and 23′, over which extends an endless canvas elevator 24, on the outer face of which are provided the transverse strips or plates 25. Mounted on said frame 1, about midway of the length thereof, and in bearings 26, is the drive shaft 27, upon the outer ends of which are mounted the sprockets 28. The ends of the drum are concaved so as to provide for the con-

nections of the arms 8 and 9 with the shaft 11, and the ends of the shaft 11 have mounted thereon the sprockets 29, which are positioned in alinement with the sprockets 28 on the shaft 27 and chains 30, connecting said sprockets 29 and 28, will cause said drum to be rotated upon the rotation of said shaft 27. The shaft 27 is also provided, adjacent one end, with an additional sprocket 31, and the roller 23′ at the upper end of said frame is also provided at one end thereof with a sprocket 32, which is positioned in the same vertical plane with said sprocket 31. A chain 33 connects said sprockets 31 and 32, so that when said shaft 27 is rotated, the roller 23′ will also be rotated to drive said endless elevator 24.

The drum 10 is provided with numerous picker teeth, or the like 34, which are adapted to engage the manure and through the rotation of said drum throw the same upon the endless elevator 24, which, in view of its connection with the shaft 27, will be rotating simultaneously with the rotation of said drum. As said elevator is provided with the transversely extending strips or plates 25, it will be seen that all manure thrown thereon, will be carried upwardly, and I have provided for the removal of the manure after the same has been elevated through said elevator 24.

The frame 1 is provided also with the transverse bars 35 and 36 which are mounted thereon, on either side of the shaft 27, and mounted on said bars 35 and 36 are the depending arms 37 of a supporting member 38, the face of which is substantially circular and flat. Extending through the axial center of the face of said supporting member and mounted in suitable bearings, is a vertically extending shaft 39, the lower end of which has mounted thereon a bevel gear 40, which meshes with a similar gear 41 carried on said shaft 27. Positioned on the face of said supporting member 38 is a disk or plate 42, which is also circular and provided with an opening in its axial center, adapted for registration with the opening in said supporting member and through which opening the upper end of said shaft 39 also extends. The disk or plate 42 being so positioned on said supporting member is capable of rotation, and said disk is provided with the upwardly extending arms 43, which arms are disposed thereon at diametrically opposite points. Rotatably mounted between said arms 43 is an additional shaft 44, said shaft 44 being provided intermediate its ends with a bevel gear 45, which meshes with a similar gear 46 mounted at the extreme upper end of said vertical shaft 39. Thus, it will be seen, that when said shaft 27 is rotated the shaft 44 carried between the arms 43 will also be rotated through the medium of the train of gears and shafts, as just described, and the purpose of this shaft 44 and the rotation thereof will be hereinafter described.

As stated the arms 43 extend upwardly from the plate 42 at diametrically opposite points thereon, and are secured to opposite sides of a frame 46′ carrying the additional endless elevator 47. The ends of the said frame 46 are provided with the rollers 48 and 49, over which said endless elevator 47 extends, and the roller 49 is provided on one of its ends with a sprocket 50, from which extends a chain 51, said chain 51 also engaging a sprocket 52 carried on one end of the shaft 44. Thus, said elevator 47 is adapted to be rotated upon the rotation of said shaft 6, which rotation will, of course, simultaneously operate said drum and said other elevator 24.

The supporting arms 43 which engage the sides of the frame 46 are engaged therewith adjacent one end thereof, and pivotally engaged with said frame, about midway, of its length, is a supporting arm 52′, which is adapted to be engaged with the frame 1 of the machine. When said arm is so engaged with the frame, the elevator will be disposed at an incline, the outer end being higher than the inner end, and as the plate 42 is rotatable on the supporting member 38, it will doubtless, be appreciated, that said elevator 47 may be swung so as to extend from either side of the machine or the rear thereof. The inner end of said frame 46 is provided with a chain 53, which may be engaged with hooks 54 on the frame 1 in any position that said elevator may be disposed, so that the same may be additionally prevented from displacement when once positioned.

The elevator 47 is so disposed with relation to the elevator 24 that the same will be immediately under the upper end of said elevator 24 in any of its adjusted positions, so that when the machine is set in operation, and the elevators rotated all materials elevated by the carrier 24 will, at the upper end thereof, be dropped upon the carrier 47 to be elevated in a different direction. In order to prevent any liability of the manure being lost, as the same is dropped from the elevator 24 to the elevator 47, I provide the removable chute 55, which extends from one side of the elevator 24 to the inner end of the elevator 47. This chute being removable can, of course, be changed from one side to the other as the elevator 47 is swung in either one direction or the other.

Mounted on the rear of the frame 1 is a motor 56, and on one end of the crank shaft 57 thereof, is mounted a belt pulley 58 over which extends a belt 59 to an additional belt pulley 60, loosely mounted on said shaft 27. A clutch mechanism 61, is also provided between the shaft 27 and the pulley 60 so that when it is desired to rotate

said shaft with the pulley, said clutch mechanism may be thrown into effective position, and vice versa, when it is desired to allow the engine to run and at the same time to stop the operation of the drum and elevators, which are operated through the rotation of said shaft 27. Also mounted on said frame 1, and extending transversely thereof, ahead of the wheels 5, is a shaft 62, rotatably mounted in the bearings 63, and provided at its ends with the sprockets 64, which sprockets are connected with additional sprockets 65, carried on the inner faces of the wheels 5, through the medium of chains 66. It will be seen, therefore, that any means which may be provided for the rotation of said shaft 62, will be sufficient to rotate the wheels 5 and drive the machine. To this end I provide on said shaft 62 a worm gear 67 which meshes with a worm 68 carried on the end of a shaft 69. Said shaft 69 is rotatably mounted in bearings 70 and 71, said bearings being mounted on an additional transverse bar 72, while the bearing 70 is slidably mounted on the transverse bar 35. The shaft 69 extends over the shaft 27 and between a pair of friction disks 73, securely mounted on said shaft 27, and carried by the shaft 69, between said disks, is a friction pulley 74. As stated, the bearing 70 for the shaft 69 is slidable on a bar 35, and said shaft is capable of such slidable movement by the provision of the universal joint 75 therein adjacent the bearing 71, and when it is desired to propel the machine forwardly, or reversely, said shaft 69 is moved one way or the other to allow the pulley 64 to frictionally engage the disks 73.

The movement of the bearing 70 to dispose the pulley 74 into engagement with either one or the other of the disks 73, is accomplished by providing on said bar 35 a bell crank 76, one arm of which is connected to the bearing 70 by means of a link 77, and the other arm connected to a lever 78, through a rod 79. It will be appreciated that when said lever is moved backwardly and forwardly and correspondingly the pulley 74, said pulley will be moved into engagement with the disks, and the usual form of rack and detent may, of course, be provided so as to retain the pulley in its various adjusted positions.

It is, doubtless, understood that the engaging of the pulley 74 with either of the disks 73, when the shaft 27 is being rotated, will either drive the machine forwardly or rearwardly, as the case may be, but in such cases, it is also desirable to change the speed with which the machine is being propelled. To this extent, I provide the shaft 69 with a key, and the pulley 74 with a slot in which the key is inserted, thereby allowing sliding movement of the pulley thereon, and the pulley is also provided with a collar 80, with which is engaged a yoke 81. A lever 82, mounted on said cross-bar 36, has connection with the yoke 81 through the medium of a rod 83, whereby said pulley may be moved along said shaft 69 to be nearer the centers or edges of the disks 73, according as it is desired to decrease or increase the speed of the machine.

Any form of seat may be provided on the frame near the rear end thereof, and in close proximity with which may be disposed the steering mechanism, not shown, so that the machine may be completely operated by one person.

As it is extremely essential that during the propulsion of the machine, the drum and elevators should not be in operation, I provide the clutch mechanisms in connection with the sprockets 28 and 31 and the bevel gear 41, said clutches being of the usual or any preferred type, whereby the shaft 27 may be allowed to rotate without affecting the operation of said sprockets and gear.

In operation when it is desired to move the machine to a pile of manure, the clutch mechanism 61 is thrown into effective position, the clutch mechanisms, having connection with the sprockets 28 and 31 and gear 4, thrown out of effective position, and the motor started.

It is, of course, understood that the pulley 74 is moved into engagement with the proper disk 73, which operation will propel the wheels 5, and when the machine has reached its destination, the pulley 74 may be thrown out of its effective position. The clutches, relative to the sprockets 28 and 31 and gear 41, may then be thrown into effective position, thereby rotating the drums 10 and elevators, and as said drum is in the forward portion of the machine, the same will be adjacent the manure to be loaded. Said drum may then be lowered through the medium of the lever 19, and as the same is rotating the teeth 34 thereon will engage the manure and throw the same upon the rotating elevator 24, whereby said manure is carried upwardly and dropped upon the additional elevator 47. As this elevator 47 had been previously disposed so as to have its outer end extended over a manure spreader or other vehicle, the manure thereon will be carried outwardly to such vehicle and dropped therein. This, of course, completes the operation of the device, and when a pile of manure has been wholly loaded upon the vehicle, the rotation of the drum and elevators may be stopped and the machine moved away, according to the manner above described relative to the moving of the machine into engagement with a pile.

From the foregoing, it will be seen that I have provided a manure loader, having a rotating drum and a pair of endless eleva-

tors, which are operated through one source of power, and it will further be seen that this source of power may be used to propel the machine without the operation of said drum and elevators. It will further be seen that I have provided one of the elevators with means, whereby the same is capable of rotating movement.

In order to prevent the manure from clogging in the gear 29 and the chain 30, as said manure is collected by the drum and passed to the elevator, I provide a shield or cover 84 which is carried by the bearing 12. This cover is so disposed as not to interfere with either the operation of the chain, gear or drum.

What I claim is:

1. A manure loader of the class described, comprising a frame, a drum rotatably mounted thereon, said drum being provided with picker teeth throughout its periphery, means to raise and lower said drum, an endless elevator mounted on said frame and having one end thereof contiguous to said drum, an additional elevator disposed immediately below the opposite end of said other elevator to coöperate therewith, means to dispose said additional elevator in various positions, and means to rotate said drum and elevators simultaneously.

2. In a manure loader of the class described, the combination with a frame, a rotatable drum mounted at one end thereof having picker teeth thereon, and an elevator also mounted on said frame having one end thereof disposed contiguous to said drum; of an additional elevator, a supporting member formed in sections, one of said sections being mounted on said frame, the other being rotatable and provided with upstanding arms secured to said additional elevator, and means to rotate said drum and elevators simultaneously.

3. In a manure loader of the class described, the combination with a frame, a drum rotatably mounted thereon and provided with picker teeth throughout its periphery, an elevator having one end thereof disposed contiguous to the drum; of an additional elevator designed to coöperate with said other elevator, supporting means for said additional elevator, comprising a plate having depending arms secured to portions of said frame, a disk rotatably mounted on said plate and provided with upwardly extending arms, said arms being secured to opposite sides of said additional elevator, whereby the same may be rotated and disposed in various positions.

4. In a manure loader, the combination with a frame, a main driving shaft, and a gear mounted on said shaft; of an elevator, a supporting member mounted on said frame, a shaft extending vertically through said supporting member and having a gear on the lower end thereof, coöperating with the gear on said drive shaft, a disk rotatably mounted on said supporting member through which said shaft also extends, the upper end of said shaft being also provided with a gear, arms extending upwardly from said disk and secured to said elevator to rotate the latter upon the rotation of the disk, and means coöperating with the gear on the upper end of said vertical shaft and the elevator to operate said elevator in its various adjusted positions from the main drive shaft.

5. In a manure loader of the class described, the combination with a frame, and a main drive shaft; of an additional elevator, supporting means for said elevator comprising a stationary member and a movable member, said stationary member being secured to said main frame and the movable member rotatable thereon, arms carried by said movable member secured to the opposite sides of said elevator, a vertical shaft extending through said members and having the lower end thereof in operative connection with the main shaft, and means carried by the arms of said movable member having operative connection with the upper end of said vertical shaft, and said elevator, whereby said elevator may be driven throughout its various positions with the main drive shaft.

6. In a manure loader of the class described, the combination with a frame, a drum rotatably mounted thereon and an elevator carried on said frame having one end disposed immediately adjacent said drum; of an additional elevator, a supporting member therefor formed in sections, one of said sections being stationarily mounted on the frame, the other being engaged with the additional elevator and rotatable on the first mentioned section to dispose said additional elevator in various positions, and means to retain the last referred to elevator in its adjusted positions.

7. In a manure loader of the class described, the combination with a frame, a drum rotatably mounted thereon, and an elevator having one end thereof disposed in close proximity with said drum; of an additional elevator, supporting means therefor formed in sections, one of the sections being rotatable to allow said additional elevator to be disposed in various positions, means to retain said additional elevator in its various adjusted positions, and additional means to operate the last referred to elevator during the movement thereof.

8. In a manure loader of the class described, the combination with a frame, an elevator mounted thereon and a main drive shaft carried on said frame; of an additional elevator, a supporting member therefor, portions of which are rotatable to allow

said additional elevator to be disposed in various positions, means to retain the last mentioned elevator in its adjusted positions, and means extending through the rotating parts of the supporting member and co-operating with the main drive shaft to transmit power to said additional elevator in all of its positions.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

SAMUEL H. HEINMILLER.

Witnesses:
C. A. LARSON,
JOSEPH W. KINGER.